

art.

Applicants have amended claim 1 to include the limitations of claim 2, and have incorporated the limitations of claim 40 into claim 39. Applicants have also broadened claims 1 and 39 with respect to the light source limitation, have amended claims 3, 6-12, 41, and 44-50 for clarity purposes, and have added claims 58-74. Claims 1, 3-19, 39, and 41-74 are presently in the application.

Claim 1 recites an imaging module comprising a frame; a circuit board mounted to said frame; an image sensor carried by said circuit board; and at least one light source for illuminating at least part of a target area, wherein at least one illumination light source is mounted to said circuit board, whereby said circuit board carries both of said image sensor and said at least one light source. Claim 39 recites all of the limitations of claim 1, plus the additional limitation of an optical reader having a housing, wherein the recited imaging module is incorporated in the reader housing.

The elements of the present claim 1 (previously recited in original claim 2) and claim 39 (previously recited in claim 40) stand rejected over O'Hagan. O'Hagan's Fig. 4 teaches a four circuit board imaging module. O'Hagan teaches an imaging module wherein several imaging module components are spread out over several circuit boards and other component-holding members. Image sensor 170 of O'Hagan appears to be in electrical communication with first circuit board 174, LEDs 180 are mounted to a second circuit board 182, an image processor 120 is mounted on a bottom circuit board 146 which lies in plane perpendicular to the planes of first and second circuit boards 174, 182. In addition, there is a fourth circuit board 176 in the O'Hagan imaging module which carries what appear to be integrated circuit chips. Aiming LEDs 186 of O'Hagan are mounted on what appear to be specialized brackets adapted to hold the aiming LEDs.

In characterizing O'Hagan, the Examiner selects words for describing O'Hagan's module which would make it appear to the outside observer that the O'Hagan module includes one circuit board and not four circuit boards. The Examiner also makes false statements which effects the impression that O'Hagan is one circuit board module. The Examiner states that O'Hagan includes a two dimensional photo sensing array 170 mounted on a circuit board 146. Applicants

respectfully point out that this statement of the Examiner is manifestly false. Photo sensing array 170 is not positioned on circuit board 146 of O'Hagan. It is positioned on circuit board 174. When describing the location of image processor 120, the Examiner merely states that the image processor 120 is "mounted on the circuit board" and fails to mention the reference number associated with "the circuit board" to which the image processor 120 is mounted. In fact, according to the O'Hagan disclosure, the circuit board to which image processor 120 is separate from the circuit board to which photo sensing array 170 is positioned. Image processor 120 is mounted on bottom circuit board 146 of O'Hagan and photo sensing array 170 is positioned on front circuit board 174. In a separate passage, the Examiner refers to an "entire circuit board apparatus" of O'Hagan, a statement which would make it appear to the person reading the office action without reference to the actual teachings of O'Hagan that O'Hagan teaches mounting a plurality of specific components on a single circuit board. It is believed that the Examiner's mischaracterization of O'Hagan as comprising a single circuit board carrying a variety of diverse components and false statement that photo sensing array 170 is mounted on bottom circuit board 146 evidences an acknowledgment by the Examiner that the prior art must teach a common circuit board for carrying a variety of specific components for the limitations of several of applicants' claims to be met, and an admission by the Examiner that O'Hagan fails to supply the necessary teachings.

According to MPEP 2131, "to anticipate a claim, the reference must teach every element of the claim." A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil of California*, 2 USPQ2d, 1051, 1053 (Fed. Cir. 1987).

The rejection of claims 1 and 39 under 35 U.S.C. § 102 should be withdrawn because O'Hagan fails to disclose all of the limitations of claims 1 and 39. Claims 1 and 39 recite an image sensor carried by a circuit board, and light source mounted to said circuit board, so that said circuit board carries both of said image sensor and the light source. O'Hagan fails to disclose a circuit board carrying both an image sensor 170 and light source 186, 180. In O'Hagan, an image sensor 170 and light sources

are carried by separate boards. Image sensor 170 of O'Hagan is carried by a board 174 and a light source 180 is carried by board 180. Light source 186 is not carried by a circuit board at all. The Examiner admits that a distinction is clear between the term "circuit board" and "circuit board apparatus" in that the Examiner developed the new term, "circuit board apparatus" to refer to a plural circuit board system, instead of referring to the O'Hagan multiple circuit board system as "a circuit board." Accordingly, present claims 1 and 39 clearly distinguish the invention over O'Hagan and the rejection of claims 1 and 39 over O'Hagan must be withdrawn.

Claims 3-19 and 39-57 are believed to be allowable at least for the reason that they depend from an allowable base claim. It is stressed, however, that claims 3-19 and claims 39-57 are allowable for reasons in addition to their dependencies on an allowable base claim.

O'Hagan also fails to anticipate the limitations of applicants' dependent claims also rejected under 35 U.S.C. § 102. For example, claims 3 and 4 recite in addition to other elements an aiming light source carried by the common circuit board referenced in claims 1 and 39 respectively. In O'Hagan, aiming light sources 186 and 188 are not even mounted to a circuit board, much less a circuit board which also carries an image sensor and an illumination LED. They are mounted to an LED holder.

Claims 5 and 43 recite that the circuit board of claims 1 and 39, respectively, carry essentially all image sensor signal processing circuitry, image capture circuitry, and decoding and or recognizing circuitry. These limitations are simply not disclosed by O'Hagan. In fact, O'Hagan states that an image sensor and image processing circuitry are to be mounted on separate circuit boards. O'Hagan discloses that image sensor 170 is to be in communication with circuit board 174 and an image processor 120 is to be disposed on circuit board 146.

Claims 6 and 44 are also not anticipated by O'Hagan as stated by the Examiner. Claims 6 and 44 recite at least one aiming light source and associated optics for projecting a "solitary horizontal aiming pattern." O'Hagan's Fig. 2 clearly teaches a cross-pattern aiming pattern and not a horizontal line aiming pattern. Accordingly, O'Hagan fails to anticipate the horizontal line aiming pattern recited in claims 6 and 44.

Claims 7-9 and 45-47 all recite the element of a one-piece frame. O'Hagan teaches only a frame which is comprised of a plurality of interconnected parts. Therefore, O'Hagan fails to anticipate the one piece frame element of claims 7-9 and 45-47, and other limitations of these claims.

Claims 10 and 11 recite the limitation that a circuit board of the recited imaging module delimits an exterior of an imaging module. O'Hagan shows only an imaging module wherein circuit boards are entirely encapsulated by a frame. Accordingly, O'Hagan fails to anticipate the circuit board exterior delimiting element of claims 10-11 and 48-49.

Claims 15 and 53 recite the limitations of a pair of aiming light sources, and an aperture plate having a pair of apertured domes disposed over the light source. O'Hagan does not disclose any of these features. Notably, the Examiner does not even attempt to make the case that O'Hagan anticipates applicants recited aperture plate and apertured domes of claims 15 and 53. The Examiner has completely ignored the limitations of claims 15 and 53.

Claims 16 and 54 recite the limitation that the frame of the recited imaging modules include a back plate having leads of an aiming LED extending therethrough, and that the leads are connected to the circuit board which carries an image sensor. O'Hagan teaches no such feature. In fact, in O'Hagan, the aiming LEDs do not even appear to be connected to a circuit board.

The Examiner has rejected claims 4, 13, 14, 17-19, 42, 51, 52, and 55-57 under 35 U.S.C. over O'Hagan in view of what the Examiner considers "well known prior art." It is noted that the Examiner has not provided a single piece of evidence of this so called "well known prior art" which the Examiner relies upon in rejecting claims 4, 13, 14, 17-19, 42, 51, 52, and 55-57. If the art which the Examiner speaks of is well known, evidence of such art presumably would be easy to provide. The Examiner is respectfully requested to provide evidence of the so-called "well known prior art" which the Examiner contends can be combined with O'Hagan to yield all of the specifically recited combination of limitations specifically recited in claims 4, 13, 14, 17-19, 42, 51, 52, and 55-57.

Claims 4 and 42 recite the limitations of a planar optical component and "resilient fingers" for receiving and securing the planar optical component. Claims

13-14 and 51-52 recite the feature of a back plate having a center recess. Claims 17-19 and claims 55-57 recite the element of an aperture plate including domes having slit apertures in combination with numerous other components. It is noted again that the above claims are believed to be allowable at least for the reason that they are dependent on an allowable base claim. Nevertheless, applicants rebut the Examiner's rejections under 35 U.S.C. § 103.

O'Hagan, as noted above, teaches a four circuit imaging module wherein an image sensor and illumination LEDs are carried by two separate circuit boards, and wherein aiming LEDs are carried by a supporting member other than the circuit boards carrying the image sensor and the illumination LEDs. O'Hagan teaches an optical member 182 which is apparently slot-fit into slots of the O'Hagan imaging module frame.

According to MPEP 2143, three basic criteria must be met to establish a prima facie case of obviousness. First there must be suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure. *In re Vaeck*, 947 F2D 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Regarding claims 4 and 42, 13-14, and 51-52, the Examiner fails to explain why the skilled artisan would be motivated to incorporate resilient fingers for holding an optical plate into an imaging module or incorporating a center recess in a back plate. The Examiner states that incorporating resilient fingers and a back plate center recess in the O'Hagan module would be a "matter of design course." The Federal circuit was stricken down the carte blanche "matter of design choice" rejection of the type the Examiner presents in the present application. The Federal Circuit has indicated that when an Examiner rejects a claim for being a "matter of design choice" the Examiner must demonstrate that there is some suggestion or teaching in the prior art which would lead the skilled artisan to modify the design

described in a reference relied upon. *In re Chu*, 36 USPQ 1089, 1095 (Fed. Circ. 1995). The bald statement that a claim is obvious as "a matter of design choice" does not establish a motivation to modify the reference. The Examiner does allege that a skilled artisan would incorporate resilient fingers into an imaging module in the interest of providing "a more economically and efficiently packaged scanning system." However, the interest of providing a "more economically and efficiently packaged scanning system" cannot seriously be taken as bona fide explanation as to why a skilled artisan would be motivated to modify the O'Hagan reference. Presumably, O'Hagan himself was motivated to make a more efficient scanner yet arrived at a design that was radically different than the claimed design. Further, restating the benefits and advantages of the applicants' claimed invention does not constitute establishing a motivation to modify a reference.

Even if the Examiner did establish a motive for incorporating some kind of resilient fingers or some kind of recess into an imaging module (which he does not), the Examiner still would not have established a case of prima facie obvious as against the claims. Another requirement of prima facie obviousness in addition to the requirement regarding the establishment of motivation, is the requirement of establishing that the prior art suggests *each and every feature* of the claimed invention. Claims 4 and 42 specifically recite the further limitation of an imaging module including sidewalls and that the resilient fingers are formed in the sidewalls and further that the resilient finger hold an optical plate. Claims 13-14 and 51-52 specifically recite a center recess for receiving an image sensor, that the center recess is formed on a back plate, and that the back plate is part of an imaging module frame. Thus, it is not enough for the Examiner to establish that there would be motivation to incorporate some kind of resilient fingers or some kind of recess somewhere into the imaging module of O'Hagan. Regarding claims 4 and 42, the Examiner must establish a motivation to modify O'Hagan to include resilient fingers *in the sidewalls* of O'Hagan. Regarding claims 13-14 and 51-52, the Examiner must show that there is motivation to build a recess according to all the specific requirements of applicants' claims.

Regarding claims 17-19 and 55-57, the Examiner has failed to point out how the prior art teaches or suggest every element of the claimed invention. Claim 17

recites an aperture plate including domes having slit apertures. O'Hagan does not suggest slit apertures and does not suggest domes. The Examiner does not even allege that O'Hagan has these features, and yet maintains that claims 17-19 and 55-57 are obvious over the combination of O'Hagan and what the Examiner calls "well known prior art." The Examiner has failed to provide any explanation whatsoever as to why a skilled artisan would be motivated to modify O'Hagan to include the features of domes or the feature of slit apertures included in the domes.

The Examiner will note that applicants have added new claims 58-74. New claims 58-74 are believed to be allowable for the reason that they recite combinations of elements not shown as suggested in the prior art. The Examiner is precluded from declining examination of claims 58-74 on the grounds that new claims 58-74 raise new issues for consideration. New claims 58-74 recite elements recited in the original claims. Further, the Examiner's search "should cover the claimed subject matter and should also cover the disclosed features which might reasonably be expected to be claimed." MPEP 904.02.

Accordingly, in view of the above amendments and remarks, Applicants believe all of the claims of the present application to be in condition for allowance and respectfully requests reconsideration and passage to allowance of the application

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned **"Version with markings to show changes made."**

If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to deposit Account No. 50-0289.

Respectfully submitted,
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"VERSION WITH MARKINGS TO SHOW CHANGES MADE."

In the Claims:

Please amend claim 1 as follows:

1 1. (Amended) An imaging module comprising:
2 a frame;
3 a circuit board mounted to said frame;
4 an image sensor carried by said circuit board; and
5 at least one [illumination] light source for illuminating at least part of a target
6 area, wherein said at least one light source is mounted to said circuit board, whereby
7 said circuit board carries both of said image sensor and said at least one light source.

Please cancel claim 2.

Please amend claim 3 as follows:

1 3. (Amended) The imaging module of claim 1, wherein said [imaging
2 module further includes at least one aiming light source,] at least one light source
3 includes an aiming light source and an illumination light source and wherein said at
4 least one illumination light source and said at least one aiming light source are each
5 mounted to said circuit board, whereby said circuit board carries each of said image
6 sensor, said at least one illumination light source and said at least one aiming light
7 source.

Please amend claim 6 as follows:

1 6. (Amended) The imaging module of claim 1, wherein said image sensor is
2 a 2D image sensor, [and] wherein said at least one [aiming] light source is a plurality
3 of aiming light sources, and wherein said module includes [associated] optics
4 associated with said plurality of aiming light sources for projecting a solitary
5 horizontal line aiming pattern in a target area.

Please amend claim 7 as follows:

1 7. (Amended) The imaging module of claim 1, wherein said frame [defines]
2 is a one-piece unit defining top, [and side] bottom and side sidewalls of said module,

3 and wherein said sidewalls and said circuit board define a cubic rectangular
4 configuration.

Please amend claim 8 as follows:

1 8. (Amended) The imaging module of claim [1, wherein said frame includes
2 substantially rigid top and side sidewalls defining a partially enclosed contained
3 area, and wherein said at least one illumination source is disposed inside said
4 contained area, whereby said at least one illumination source is structurally protected
5 by said frame.] 7, wherein said imaging module further comprises a lens assembly
6 and wherein said frame is a one-piece unit further comprising a retainer section
7 retaining said lens assembly.

Please amend claim 9 as follows:

1 9. (Amended) The imaging module of claim [1]7, wherein said [frame
2 includes substantially rigid] top and side sidewalls of said one-piece frame
3 [defining] define a partially enclosed contained area, and wherein said at least one
4 [illumination] light source and said image sensor are disposed inside said contained
5 area, whereby said at least one [illumination] light source and said image sensor are
6 structurally protected by said frame.

Please amend claim 10 as follows:

1 10. (Amended) The imaging module of claim 1, wherein said frame includes
2 [substantially rigid] top and side sidewalls, and wherein a combination of said circuit
3 board and said top and side sidewalls defines a partially enclosed contained area and
4 delimits an exterior of said module, and wherein said at least one [illumination] light
5 source is disposed inside said contained area, whereby said at least one
6 [illumination] light source is structurally protected by a combination of said circuit
7 board and said frame.

Please amend claim 11 as follows:

1 11. (Amended) The imaging module of claim 1, wherein said frame includes
2 [substantially rigid] top and side sidewalls and wherein a combination of said circuit

board and said top and side sidewalls defines a partially enclosed contained area and delimits an exterior of said module, and wherein said at least one [illumination] light source and said image sensor are disposed inside said contained area, whereby said at least one [illumination] light source and said image sensor are structurally protected by a combination of said circuit board and said frame.

Please amend claim 12 as follows:

12. (Amended) The imaging module of claim 10, wherein essentially an entirety of [illumination] light sources of said module are incorporated in said contained area.

Please amend claim 15 as follows:

15. (Amended) The imaging module of claim 1, [further including] wherein said at least one light source comprises a pair of aiming light sources, and wherein said module further comprises an aperture plate having a pair of apertured domes disposed over said light sources for shaping light emanating from said aiming light sources.

Please amend claim 16 as follows:

16. (Amended) The imaging module of claim 1, wherein said frame includes a back plate, and wherein said at least one [illumination] light source further includes illumination and aiming LEDs having leads extending through said back plate and being electrically connected to said circuit board.

Please amend claim 17 as follows:

17. (Amended) The imaging module of claim 1, wherein said at least one [illumination] light source further includes illumination and aiming LEDs being electrically connected to said circuit board, and wherein said module further comprises:

an aperture plate including domes having slit apertures for shaping light emanating from said aiming LEDs being fit over said aiming LEDs; and

a diffuser plate including optics for diffusing light emanating from said

illumination LEDs being positioned in said optical reader forward of said aperture plate.

Please amend claim 39 as follows:

39. (Amended) An optical reader for reading indicia, said optical reader comprising:
a housing; and
an imaging module disposed in said housing, said imaging module including a frame;
a circuit board mounted to said frame;
an image sensor carried by said circuit board; and
at least one [illumination]light source for illuminating at least part of a target area outside of said housing, wherein said at least one light source is mounted to said circuit board, whereby said circuit board carries both of said image sensor and said at least one illumination light source.

Please cancel claim 40.

Please amend claim 41 as follows:

41. (Amended) The optical reader of claim 39, wherein [said imaging module further] said at least one light source includes at least one illumination light source and at least one aiming light source, and wherein said at least one illumination light source and said at least one aiming light source are each mounted to said circuit board, whereby said circuit board carries each of said image sensor, said at least one illumination light source and said at least one aiming light source.

Please amend claim 44 as follows:

44. (Amended) The optical reader of claim 39, wherein said image sensor is a 2D image sensor, [and] wherein said [module further includes] at least one [aiming] light source is a plurality of aiming light sources and [associated] wherein said module includes optics associated with said plurality of aiming light source for projecting a solitary horizontal line aiming pattern in a target area.

Please amend claim 45 as follows:

1 45. (Amended) The optical reader of claim 39, wherein said frame [defines
2 top and] is a one-piece unit defining top bottom and side sidewalls of said module,
3 and wherein said sidewalls and said circuit board define a cubic rectangular
4 configuration.

Please amend claim 46 as follows:

1 46. (Amended) The optical reader of claim [39]45, wherein said [frame
2 includes substantially rigid top and side sidewalls defining a partially enclosed
3 contained area, and wherein said at least one illumination source is disposed inside
4 said contained area, whereby said at least one illumination source is structurally
5 protected by said frame.] imaging module further comprises a lens assembly and
6 wherein said frame is a one-piece unit further comprising a retainer section retaining
7 said lens assembly.

Please amend claim 47 as follows:

1 47. (Amended) The optical reader of claim [39]45, wherein said [frame
2 includes substantially rigid] top and side sidewalls of said one-piece frame
3 [defining]define a partially enclosed contained area, and wherein said at least one
4 illumination source and said image sensor are disposed inside said contained area,
5 whereby said at least one illumination source and said image sensor are structurally
6 protected by said frame.

Please amend claim 48 as follows:

1 48. (Amended) The optical reader of claim 39, wherein said frame includes
2 [substantially rigid] top and side sidewalls, and wherein a combination of said circuit
3 board and said top and side sidewalls defines a partially enclosed contained area and
4 delimits an exterior of said module, and wherein said at least one illumination source
5 is disposed inside said contained area, whereby said at least one illumination source
6 is structurally protected by a combination of said circuit board and said frame.

Please amend claim 49 as follows:

1 49. (Amended) The optical reader of claim 39, wherein said frame includes
2 [substantially rigid] top and side sidewalls and wherein a combination of said circuit
3 board and said top and side sidewalls defines a partially enclosed contained area and
4 delimits an exterior of said module, and wherein said at least one illumination source
5 and said image sensor are disposed inside said contained area, whereby said at least
6 one illumination source and said image sensor are structurally protected by a
7 combination of said circuit board and said frame.

Please amend claim 50 as follows:

1 50. (Amended) The optical reader of claim 48, wherein essentially an
2 entirety of illumination sources of said module are incorporated in said contained
3 area.